UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,726	04/05/2001	Cecilia Brandel	47253-00006	6053

7590	03/29/2004	EXAMINER

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ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 03/29/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/826,726	BRANDEL ET AL.
	Examiner	Art Unit	
	Lewis A Michael	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 April 2001</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) ~~1-13~~ *1-3 and 7-9* is/are rejected.

7)☒ Claim(s) *4-6 & 10-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☒ Certified copies of the priority documents have been received in Application No. <u>04</u>.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>06,3</u>

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
      DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A
      COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer
      program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)),
      and tables having more than 50 pages of text are permitted to be
      submitted on compact discs.) or
      REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a).
      "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
      (1) Field of the Invention.
      (2) Description of Related Art including information disclosed under 37
      CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A
      "Sequence Listing" is required on paper if the application discloses a
      nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if
      the required "Sequence Listing" is not submitted as an electronic
      document on compact disc).

Information Disclosure Statement

1.   The information disclosure statement filed January 23, 2002 fails to comply with

37 CFR 1.98(a)(2): It requires a legible copy of the PTO-1449 Form. The references,

Brandel et al., "Speech Enhancement by Speech Rate Conversion" and the EPO

Search Report, 8/14/01, have cited on PTO-892.

2.   Note that the two IDS (1449) forms submitted on 8/30/01 and 4/5/01 are

duplicates of each other except for the Atkinson reference.

Claim Objections

1.   Claims 4 –6 and 10 - 13 are objected to under 37 CFR 1.75(c) as being in

improper form because a multiple dependent claims cannot depend on multiple

dependent claims. See MPEP § 608.01(n). Accordingly, the claims 4-6 & 10-13 have

not been further treated on the merits.

Claim Rejections - 35 USC § 103

1.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating
            obviousness or nonobviousness.

2.   Claims 1-3 & 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Yeldener (U.S. Patent 6456965) in view of Iijima et al. (U.S. Patent 5930747) and

further in view of Huang (6418407).

Regarding claims 1 & 7, Yeldener discloses a method of estimating the pitch of a

speech signal comprising the steps of (Fig.2):

(1)   Dividing the speech signal into segments (Col 3,Line 37)

(2)   Detecting peaks in the filtered speech, characterized in that

the method further comprises the steps of:

(i)   Calculating an average value of pitch estimates

estimated in a number of previous segments (Abstract

(step25)).

(ii)   Calculating for each peak in the filtered speech

by taking the difference [mean squared error

(difference measure)] between the position of the

peak candidate [peak of synthesized signal] and input

speech (Col 5, Line 31; Col 6,Lines 7 - 29). Using the

position of the peak having the smallest mean

squared error value of said difference as an estimate

of the pitch.

Yeldener does not disclose calculating for each segment a conformity function.

However, Iijima et al. teach the use of filtering and autocorrelation function in the extraction of the pitch period (Fig1 (13,17); Abstract). The use of an autocorrelation function helps to calculate high intensity/pitch lag information used in pitch extraction.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Yeldener with the use of the use of an autocorrelation conformity function as taught by Iijima et al. since it would have increased the accuracy of the pitch period estimation.

The modified Yeldener discloses the use of the average pitch period calculated from previous segments, however, the function of taking the difference between the peak candidates represented by the samples within a segment and the average pitch period is not disclosed. However, Huang et al. teaches the use of calculating a roughness factor that uses the differences between a peak value represented by the samples within a segment and an average of sample values of the two adjacent peaks. The roughness factor is used in future frames to make decisions on pitch candidates.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to further modify the modified Yeldener with the use of peak difference

estimate between an average as taught by Huang et al. since it would have increased the accuracy of the pitch period estimation.

Regarding claims 2 & 8,the modified Yeldener discloses a method characterized in that it further comprises the steps of: sampling the speech signal to obtain a series of samples, and performing said division into segments such that each segment has a fixed number of consecutive samples (Col 3, Lines 10 - 37).

Regarding claims 3 & 9, the modified Yeldener discloses a method characterized in that it further comprises the steps of: estimating a set of filter parameters using linear predictive analysis (LPA), providing a modified signal (26) by filtering the speech signal through a filter based on said estimated set of filter parameters, and calculating said conformity function of the modified signal (Fig. 1A(110)).

Conclusion

1.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gustafsson et al.	U.S. Patent (6704711)
Satyamurti et al.	U.S. Patent (6418405)
Sasaki	U.S. Patent (6377915)
Dubnowski et al.	U.S. Patent (4015088)

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael A. Lewis whose telephone number is 703 305-

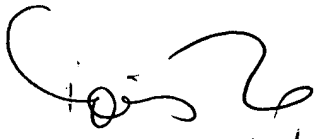8730. The examiner can normally be reached on Monday through Friday, 8:30 am – 5

pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Doris To can be reached on (703) 305-4827. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Lewis A Michael
Examiner
Art Unit 2655

Mal

3/16/2004

DORIS H. TO   3/22/04
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600